

**EVENT TREE INFORMATION
FROM NORTH ANNA IPE**

**TABLE 3.1.2-2
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
A	Large LOCA	Initiating Event-large LOCA
B	Offsite Power Recovery	Failure to recover an ESF bus following station black-out by recovering offsite power.
Ch	Containment Heat Removal	Failure of Service Water to an operable Recirculation Spray heat exchanger.
DG	EDG 1H or 1J Available	Failure of at least one diesel generator to start and run following loss of offsite power leading to station blackout.
Dh	Hot Leg Recirculation	Failure of the operator to switch to hot leg recirculation following a large LOCA.
D1	High Pressure Injection	Failure of Charging Pumps to inject in the appropriate mode.
D2	Accumulators Inject	Failure of Accumulators to inject in the appropriate mode.
D3	Low Head SI	Failure of low head SI pumps to inject.
D4	Emergency Boration	Failure to shutdown following ATWS by boron addition.
Fm	Break Size Partition	Percentage of small breaks not causing a CDA Hi Hi signal.
Hv	ESGR Cooling	Failure to provide HVAC to the ESGR using 1/2 AHUs and 1/3 chillers.
H1	Low Head Recirculation	Failure of low head pumps in the recirculation mode.

**TABLE 3.1.2-2 (Continued)
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
H2	High Head Recirculation	Failure of low head and charging pumps in the high pressure recirculation mode.
K	Reactor Subcritical	Failure of control rods to insert as result of Reactor Protection System failure.
L	Auxiliary Feedwater System Available	Failure of Auxiliary Feedwater System for transients or small or medium LOCAs with reactor trip.
Lt	Turbine-Driven AFW available	Failure of the Turbine-Driven Auxiliary Feedwater Pump to start and run following station blackout.
M	Main Feedwater System Available	Failure of Main Feedwater.
MS1	Manual Scram	Failure of the operator to remove power from the control rod drive mechanisms.
O	Cooldown and Depressurize	Operator fails to cooldown and depressurize the reactor after a small break or in response to a loss of RCP seal cooling.
O2	Late Cooldown	Failure of operator to cooldown and depressurize in response to a ruptured steam generator.
P	Pressurizer PORVs	Failure of the operator to open 1/2 pressurizer PORVs to cause RCS feed and bleed.
Pr	Pressure Relief	Failure of adequate pressure relief following an ATWS event.

**TABLE 3.1.2-2 (Continued)
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
Q	RCS Boundary Intact	Failure of pressurizer PORV to close after opening during a transient.
Qs	Quench Spray	Failure of 1/2 trains of Quench Spray.
Rc	Room Cooling Restored	Recovery of ESGR cooling or SW (resulting in reactor trip and loss of emergency power) prior to core uncover and vessel failure, or containment failure.
Rs	Recirculation Sprays Operable	Failure of at least one train of Recirculation Sprays to remove heat from Containment.
Rv	Reactor Vessel Integrity	Consideration of PTS following a rapid RCS cooldown.
RX	Reactor Vessel Rupture	Initiating event is a Reactor Vessel rupture.
SGI	Steam Generator Isolation	Failure to isolate the ruptured Steam Generator.
Slc	No Potential for RCP Seal Failure	Failure to establish seal cooling from operable Unit 2 CC pumps.
S1	Medium LOCA	Initiating event is a medium LOCA (2" to 6").
S2	Small LOCA	Initiating event is a small LOCA (3/8" to 2").
T	Transients	Representative initiating event for general transient event tree.
Tt	Turbine Trip	Turbine fails to trip.

**TABLE 3.1.2-2 (Continued)
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
T1	Loss of Offsite Power	Initiating event is Loss of of all Offsite Power.
T1A	Station Blackout	Loss of diesel generators 1H and 1J leading to station blackout at Unit 1.
T1Tr	Loss of ESGR Cooling Transfer from T1 Event Tree	Transfer of T1Hv sequence, Loss of Offsite Power with consequential loss of Emergency Switchgear Room Cooling.
T2	Loss of MFW	Initiating event is non-recoverable loss of Main Feedwater.
T2A	Recoverable Loss of MFW	Initiating event is recoverable loss of Main Feedwater following Feedwater isolation.
T2ATr	Loss of ESGR Cooling Transfer from T2A Event Tree	Transfer of T2AHv sequence, recoverable loss of Main Feedwater with coincidental loss of Emergency Switchgear Room Cooling.
T2Tr	Loss of ESGR Cooling Transfer from T2 Event Tree	Transfer of T2Hv sequence, non-recoverable loss of Main Feedwater with coincidental loss of Emergency Switchgear Room Cooling.
T3	Transient with MFW Available	Initiating event is Transient with Main Feedwater available.
T3Tr	Loss of ESGR Cooling Transfer from T3 Event Tree	Transfer of T3Hv sequence, transient with Main Feedwater available, with coincidental loss of Emergency Switchgear Room Cooling.
T4	Loss of RC Pump Seal Cooling	Initiating event is loss of RCP seal injection and thermal barrier cooling.

**TABLE 3.1.2-2 (Continued)
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
T5A	Loss of DC Bus I	Initiating event is loss of DC Bus 1-I.
T5B	Loss of DC Bus III	Initiating event is loss of DC Bus 1-III.
T6	Loss of Service Water	Service Water is lost from both the reservoir and Lake Anna.
T7	Steam Generator Tube Rupture	Initiating event is a steam generator tube rupture.
T8	Loss of Emergency Switchgear Room Cooling	Loss of HVAC to the Emergency Switchgear Room.
T9A	Loss of Power from 4160 V Emergency Bus 1H	Loss of feeder power to or failure of 4160 V emergency bus 1H.
T9ATr	Loss of ESGR Cooling Transfer from T9A Event Tree	Transfer of T9AHv sequence, loss of feeder power to or failure of 4160 V Emergency Bus 1H, with consequential loss of Emergency Switchgear Room Cooling.
T9B	Loss of Power from 4160 V Emergency Bus 1J	Loss of feeder power to or failure of 4160V emergency bus 1J.
T9BTr	Loss of ESGR Cooling Transfer from T9B Event Tree	Transfer of T9BHv sequence, loss of feeder power to or failure of 4160 V Emergency Bus 1J, with consequential loss of Emergency Switchgear Room Cooling.
TL	Low power transients (for ATWS)	Initiating event is all transients at power lower than or equal to 40 percent.
TH	High power transients (for ATWS)	Initiating event is all transients at power greater than or equal to 40 percent.

TABLE 3.1.2-2 (Continued)
EVENT TREE HEADINGS

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
VX	Interfacing System LOCA	Initiating event is an Inter- facing System LOCA.
Vi	Isolation of LOCA	Failure to isolate interfacing LOCA.
W	RHR Cooling	Failure of 1/2 Residual Heat Removal Trains.
Y	Core Cooling Recovery	Failure of the operator to use steam to rapidly cooldown and depressurize the RCS as directed by 1-FR-C.1 or C.2.

C:\MAPS\ETRES\OLDTRES\A.EVT 1: 00: 02am 12-15-92 MUPRA 2.1a VPMR
 Quantification Date: 3-12-93 9: 07: 52am TOTAL Cdf = 4.05E-006

LARGE BREAK LOCA	EMERGENCY SWITCHGEAR ROOM COOLING AVAILABLE	ACCUMULATOR INJECTION	LOW HEAD SAFETY INJECTION AVAILABLE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LOW HEAD RECIRCULATION AVAILABLE	HOT LEG RECIRCULATION AVAILABLE	SEQUENCE	SEQUENCE DESCRIPTOR	PDS	FREQUENCY
A	Hv	O2	O3	Os	Rs	Ch	H1	Dh	0		0	
										P01 A	OK	
								CH01 3.88E-03		P02 ADh	12	5.17E-07
							H101 2.51E-03			P03 AH1	13	8.20E-07
					RS01 4.48E-04	CH01 2.87E-03				P04 ACh	1	1.80E-08
										P05 ARs	2	4.20E-09
								CH01 3.88E-03		P06 AOs	OK	
					OS01 4.02E-03		H101 2.51E-03			P07 AOsDh	12	1.69E-09
						CH02 1.77E-02				P08 AOsH1	13	1.80E-09
					RS02 1.06E-02					P09 AOsCh	1	7.54E-11
										P10 AOsRs	2	1.21E-10
						CH01 2.87E-03				P11 A03	13	5.88E-07
			D301 1.20E-03		RS01 4.48E-04					P12 AD3Ch	13	8.41E-10
				OS01 4.02E-03						P13 AD3Rs	13	2.24E-10
										P14 AD3Os	13	1.81E-09
								CH01 3.88E-03		P15 AD2	12	2.12E-06
							H101 2.51E-03			P16 AD2Dh	12	2.07E-09
					RS01 4.48E-04	CH01 2.87E-03				P17 AD2H1	13	2.73E-09
										P18 AD2Ch	1	6.52E-11
										P19 AD2Rs	2	1.57E-11
								CH01 3.88E-03		P20 AD2Os	12	7.68E-09
					OS01 4.02E-03		H101 2.51E-03			P21 AD2OsDh	12	0.00E+00
						CH02 1.77E-02				P22 AD2OsH1	13	0.00E+00
			D201 4.24E-03		RS02 1.06E-02					P23 AD2OsCh	1	0.00E+00
										P24 AD2OsRs	2	0.00E+00
						CH01 2.87E-03				P25 AD203	13	2.28E-09
					OS01 4.02E-03					P26 AD203Ch	13	0.00E+00
			D301 1.20E-03		RS01 4.48E-04					P27 AD203Rs	13	0.00E+00
				OS01 4.02E-03						P28 AD203Os	13	0.00E+00
	HV01 1.30E-03									P29 AHv	TR	3.38E-07 TO

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

A: LARGE BREAK LOSS OF COOLANT ACCIDENT EVENT TREE

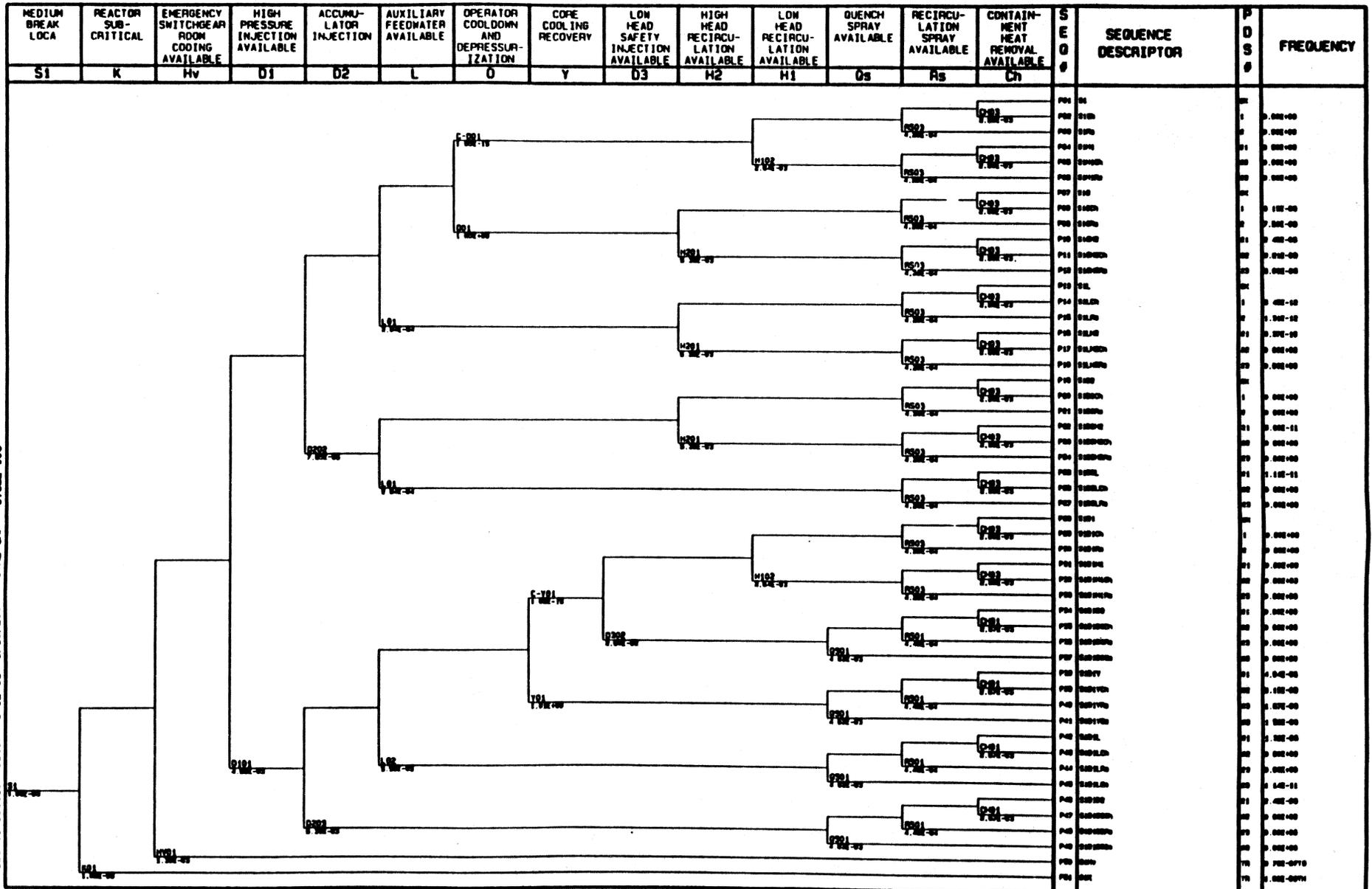
C:\MAPS\ETRES\ALDTRES\RX.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 9:27:07am TOTAL CF = 2.66E-07

REACTOR VESSEL RUPTURE	QUENCH SPRAY AVAILABLE	LOW HEAD SAFETY INJECTION AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	SEQUENCE	SEQUENCE DESCRIPTOR	PATHS	FREQUENCY
RX	Os	D3	Rs	Ch	0		0	
						P01 RX	12	2.66E-07
				CHO1 2.67E-03		P02 RXCh	12	4.16E-10
			RS01 4.48E-04			P03 RXRs	13	1.13E-10
						P04 RXOs	12	9.71E-10
				CHO1 2.67E-03		P05 RXOsCh	1	0.00E+00
	OS01 4.02E-03		RS01 4.48E-04			P06 RXOsRs	2	0.00E+00
		D301 1.20E-03				P07 RXOsD3	13	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

RX: REACTOR VESSEL RUPTURE EVENT TREE

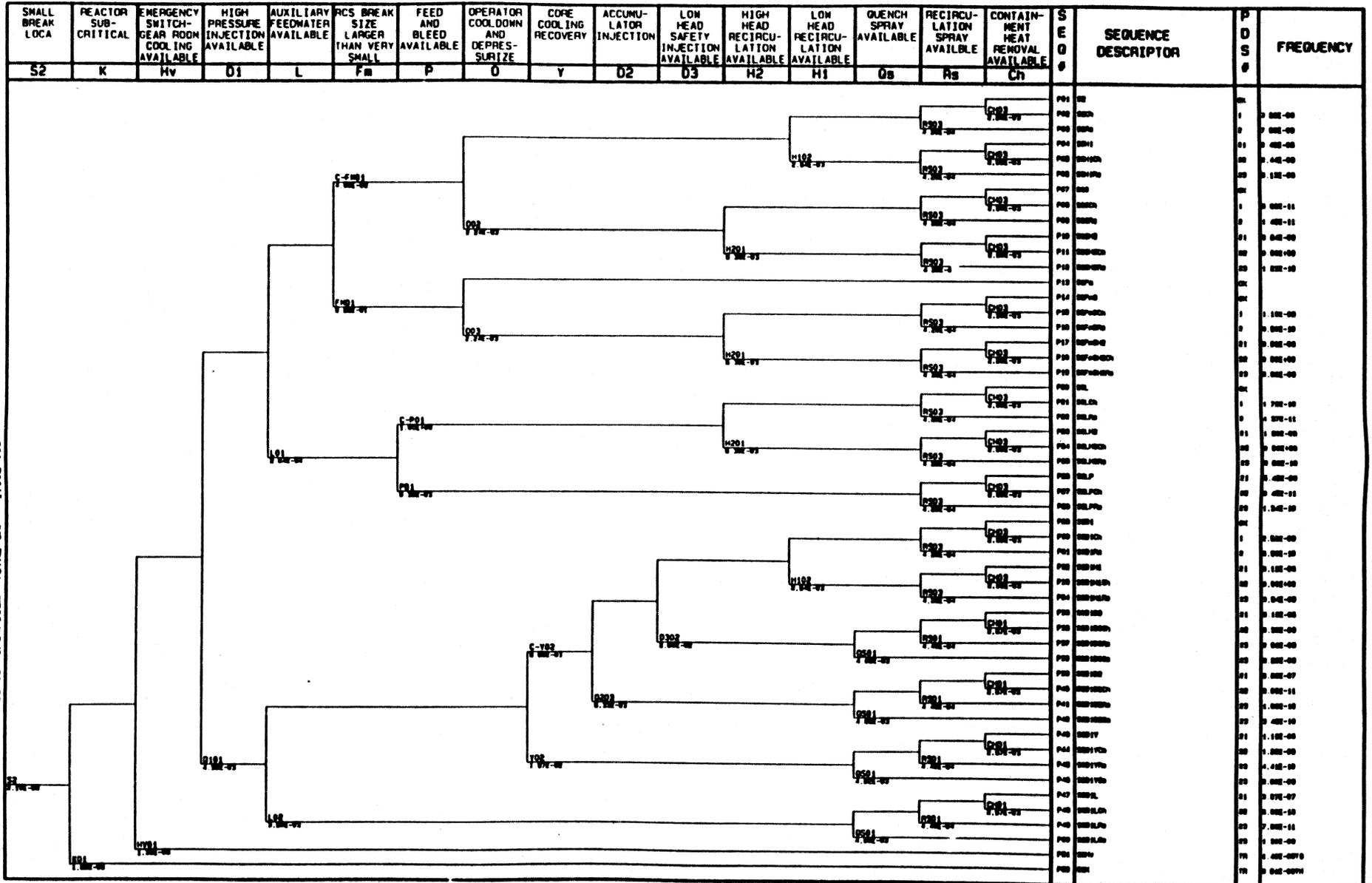
C:\MAPS\ETRES\QLOTTRES\1.EVT 1: 00: 02am 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 9: 30: 26am TOTAL CDF = 6.55E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

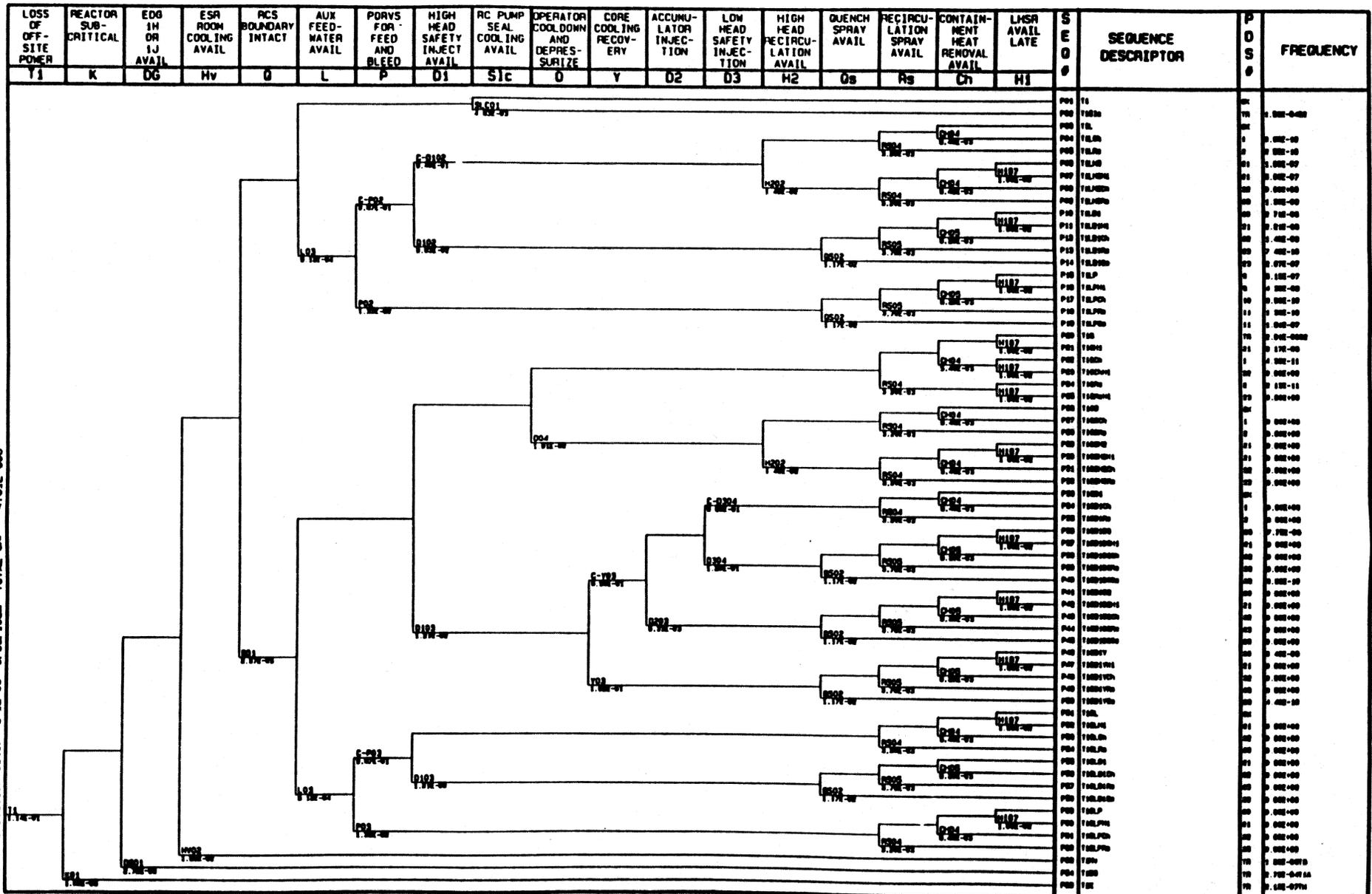
S1: MEDIUM BREAK LOSS OF COOLANT ACCIDENT EVENT TREE

C:\NAPS\ETRES\02.EVT 1:00:02am 12-15-92 NUPRA 2.18 VPMR
 Quantification Date: 3-12-93 9:34:56am TOTAL CHF = 1.00E-005



NORTH ANNA INDIVIDUAL PLANT EXAMINATION
 S2: SMALL BREAK LOSS OF COOLANT ACCIDENT EVENT TREE

C:\MAPS\ETRES\QLO\ETRES\11.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 9:52:10am TOTAL CDF = 4.61E-06



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T1: LOSS OF OFFSITE POWER EVENT TREE

C:\MAPS\ETRES\OLD\TRES\TIA.EVT 1:00:02am 12-19-92 NUPRA 2.18 VPMR
 Quantification Date: 3-12-93 10:00:19am TOTAL Cdf = 7.97E-006

STATION BLACKOUT	RCS BOUNDARY INTACT	TURBINE DRIVEN AFM PUMP AVAILABLE	RC PUMP SEAL COOLING FROM UNIT 2	AC POWER RECOVERY PRIOR TO CORE UNCOVERY	AC POWER RECOVERY PRIOR TO VESSEL FAILURE	AC POWER RECOVERY PRIOR TO CONTAINMENT FAIL	AUXILIARY FEEDWATER AVAILABLE	HIGH HEAD SAFETY INJECTION AVAILABLE	RC PORVS OPEN FOR FEED & BLEED	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LHRS AVAILABLE LATE	SEQUENCE	SEQUENCE DESCRIPTOR	POS	FREQUENCY
Y1A	0	Lt	S1c	B	B1	B2	L	D1	P	Os	Rs	Ch	H1				
														P01	T1A	01	0.00E+00
														P02	T1A01	02	0.00E+00
														P03	T1A02	03	0.00E+00
														P04	T1A03	04	0.00E+00
														P05	T1A04	05	0.00E+00
														P06	T1A05	06	0.00E+00
														P07	T1A06	07	0.00E+00
														P08	T1A07	08	0.00E+00
														P09	T1A08	09	0.00E+00
														P10	T1A09	10	0.00E+00
														P11	T1A10	11	0.00E+00
														P12	T1A11	12	0.00E+00
														P13	T1A12	13	0.00E+00
														P14	T1A13	14	0.00E+00
														P15	T1A14	15	0.00E+00
														P16	T1A15	16	0.00E+00
														P17	T1A16	17	0.00E+00
														P18	T1A17	18	0.00E+00
														P19	T1A18	19	0.00E+00
														P20	T1A19	20	0.00E+00
														P21	T1A20	21	0.00E+00
														P22	T1A21	22	0.00E+00
														P23	T1A22	23	0.00E+00
														P24	T1A23	24	0.00E+00
														P25	T1A24	25	0.00E+00
														P26	T1A25	26	0.00E+00
														P27	T1A26	27	0.00E+00
														P28	T1A27	28	0.00E+00
														P29	T1A28	29	0.00E+00
														P30	T1A29	30	0.00E+00
														P31	T1A30	31	0.00E+00
														P32	T1A31	32	0.00E+00
														P33	T1A32	33	0.00E+00
														P34	T1A33	34	0.00E+00
														P35	T1A34	35	0.00E+00
														P36	T1A35	36	0.00E+00
														P37	T1A36	37	0.00E+00
														P38	T1A37	38	0.00E+00
														P39	T1A38	39	0.00E+00
														P40	T1A39	40	0.00E+00
														P41	T1A40	41	0.00E+00
														P42	T1A41	42	0.00E+00
														P43	T1A42	43	0.00E+00
														P44	T1A43	44	0.00E+00
														P45	T1A44	45	0.00E+00
														P46	T1A45	46	0.00E+00
														P47	T1A46	47	0.00E+00
														P48	T1A47	48	0.00E+00
														P49	T1A48	49	0.00E+00
														P50	T1A49	50	0.00E+00
														P51	T1A50	51	0.00E+00
														P52	T1A51	52	0.00E+00
														P53	T1A52	53	0.00E+00
														P54	T1A53	54	0.00E+00
														P55	T1A54	55	0.00E+00
														P56	T1A55	56	0.00E+00
														P57	T1A56	57	0.00E+00
														P58	T1A57	58	0.00E+00
														P59	T1A58	59	0.00E+00
														P60	T1A59	60	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION
 T1A: STATION BLACKOUT EVENT TREE
 TRANSFER FROM T1 LOSS OF OFFSITE POWER

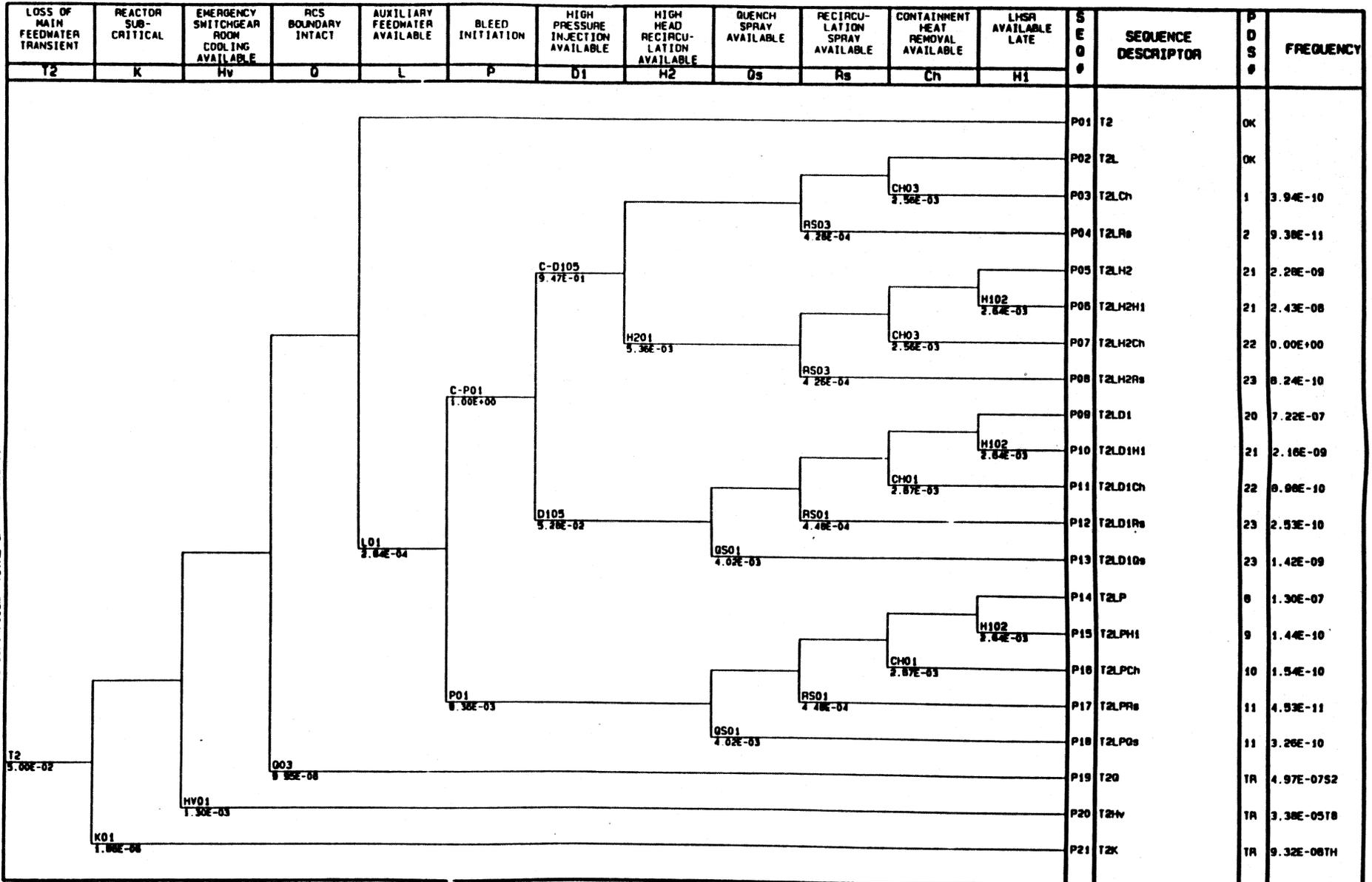
LOSS OF ESOR COOLING TRANSFER FROM T1 EVENT TREE	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	ESOR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	ESOR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	ESOR COOLING RECOV BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	HHSI/HMSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LMSR AVAILABLE LATE	SEQUENCE DESCRIPTOR	PROBABILITY	FREQUENCY
T1Tr	0	Lt	RC1	RC2	RC3	D1	Os	Rs	Ch	H1	SEQ	DS	FREQUENCY
											P01 T1Tr	OK	
											P02 T1TrRC2	4	0.00E+00
											P03 T1TrRC2Ch	5	0.00E+00
											P04 T1TrRC2Rs	6	0.00E+00
											P05 T1TrRC2Os	6	0.00E+00
											P06 T1TrRC2RC3	7	0.00E+00
											P07 T1TrLt	OK	
											P08 T1TrLtRC1	4	1.29E-09
											P09 T1TrLtRC1Ch	5	6.09E-10
											P10 T1TrLtRC1Rs	6	0.00E+00
											P11 T1TrLtRC1Os	6	0.00E+00
											P12 T1TrLtRC1RC3	7	0.00E+00
											P13 T1TrO	OK	
											P14 T1TrOH1	21	1.01E-06
											P15 T1TrOCh	22	4.28E-09
											P16 T1TrORs	23	1.10E-08
											P17 T1TrOD1	20	4.00E-06
											P18 T1TrOD1H1	21	3.82E-10
											P19 T1TrOD1Ch	22	1.20E-08
											P20 T1TrOD1Rs	23	0.00E+00
											P21 T1TrOD1Os	23	2.22E-06
											P22 T1TrORC1	18	5.15E-10
											P23 T1TrORC1Ch	18	0.00E+00
											P24 T1TrORC1Rs	18	0.00E+00
											P25 T1TrORC1Os	18	0.00E+00
											P26 T1TrORC1RC3	19	0.00E+00

C:\VAP\ETRES\OLDTRES\T1TR.EVT 1:00:02am 12-15-92 ALPHA 2.1a VPMR
 Quantification Date: 3-12-93 10:02:21am TOTAL CF = 7.28E-006

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T1Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T1 LOSS OF OFFSITE POWER EVENT TREE

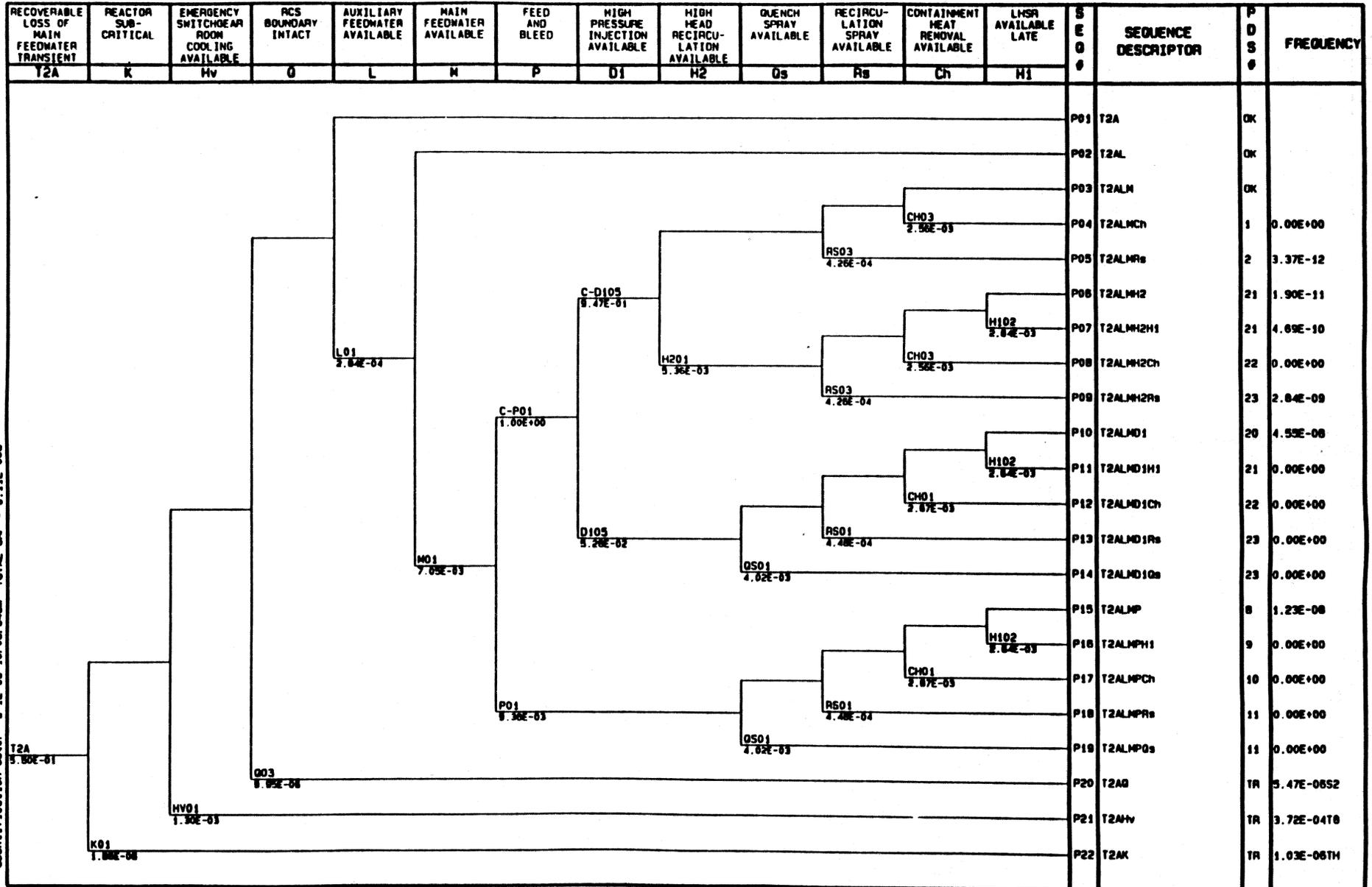
C:\NAPS\ETRES\OLD\ETRES\T2 EVT 1:00:02am 12-15-83 NUPRA 2.1a YPMR
 Quantification Date: 3-12-83 10:04:01am TOTAL CDF = 8.85E-07



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2: LOSS OF MAIN FEEDWATER EVENT TREE

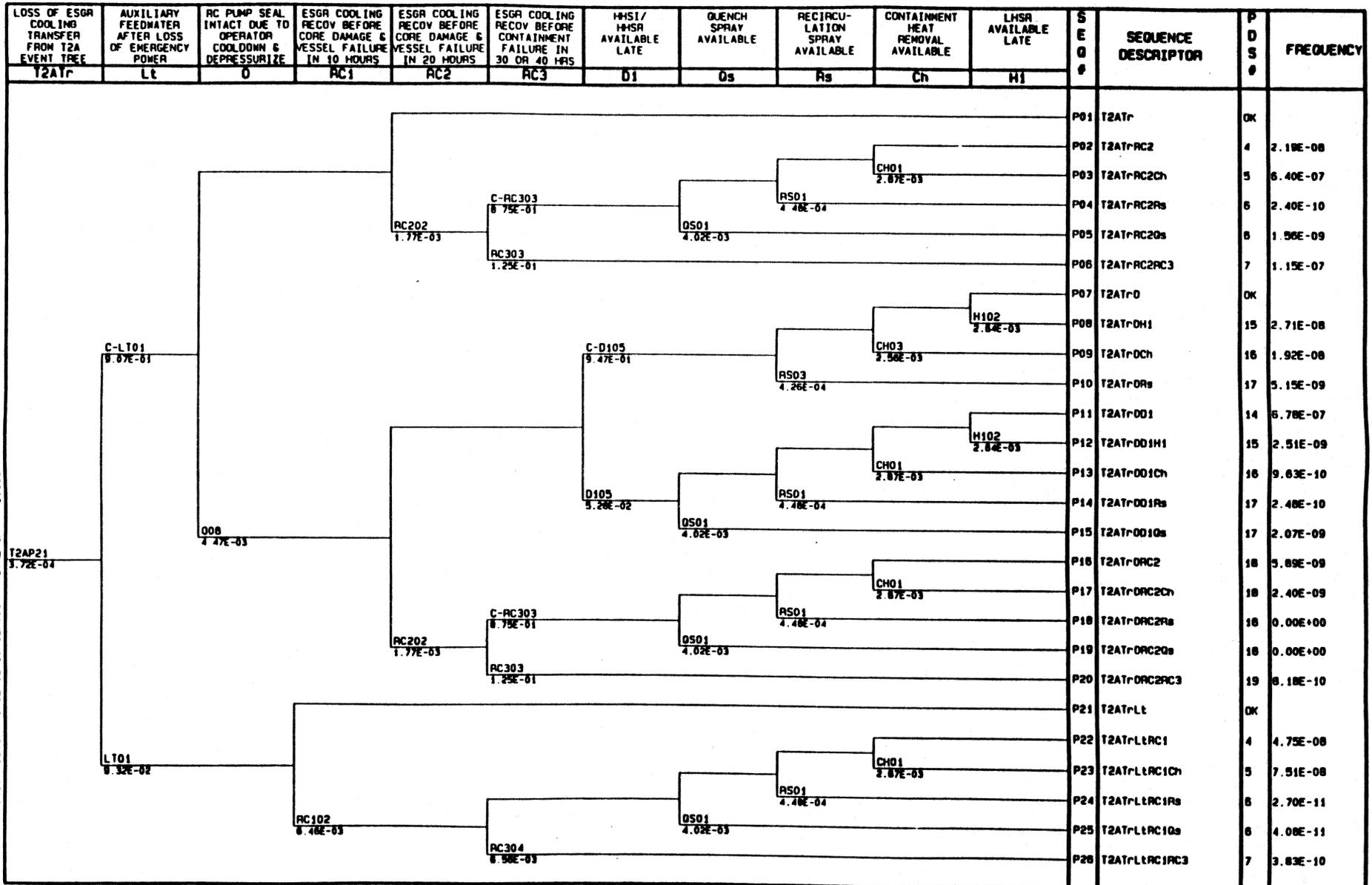
C:\MAPS\ETRES\LOTTRES\T2A.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:08:54am TOTAL CDF = 6.11E-008



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2A: RECOVERABLE LOSS OF MAIN FEEDWATER EVENT TREE

C:\MAPS\TRES\OLDTRES\T2ATR.LEV 1:00:02am 12-15-92 MUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:12:00am TOTAL CHF = 1.65E-006

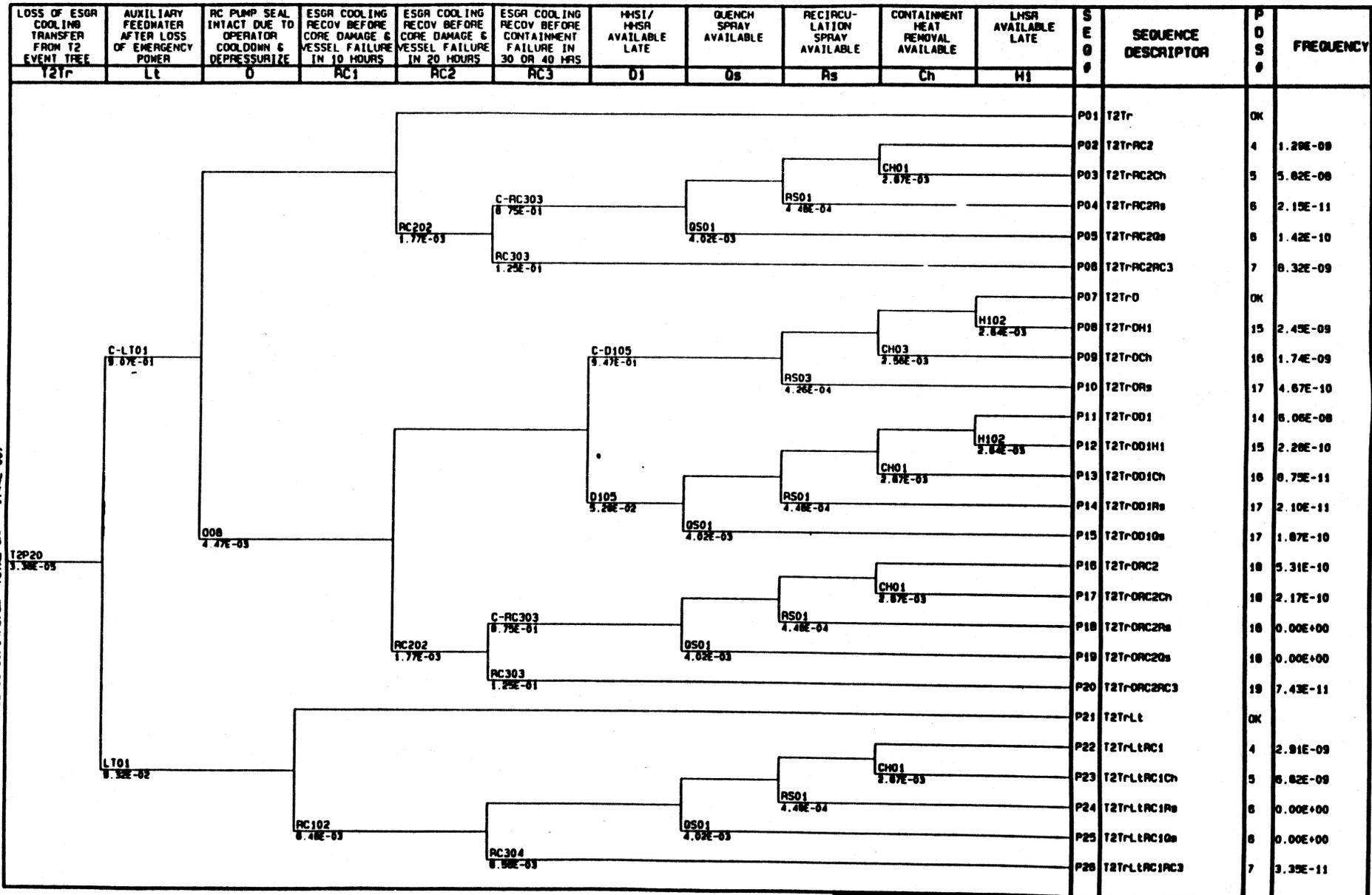


LOSS OF ESGR COOLING TRANSFER FROM T2A EVENT TREE	AUXILIARY FEEDWATER AFTER LOSS OF EMERGENCY POWER	RC PUMP SEAL INTACT DUE TO OPERATOR COOLDOWN & DEPRESSURIZE	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAILURE IN 10 HOURS	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAILURE IN 20 HOURS	ESGR COOLING RECOV BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	HHSR/ HHSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LHSR AVAILABLE LATE	SEQ #	SEQUENCE DESCRIPTOR	PTS	FREQUENCY
T2ATR	Lt	O	RC1	RC2	RC3	D1	Qs	Rs	Ch	H1				

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2ATR: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING
 TRANSFER FROM T2A RECOVERABLE LOSS OF MAIN FM EVENT TREE

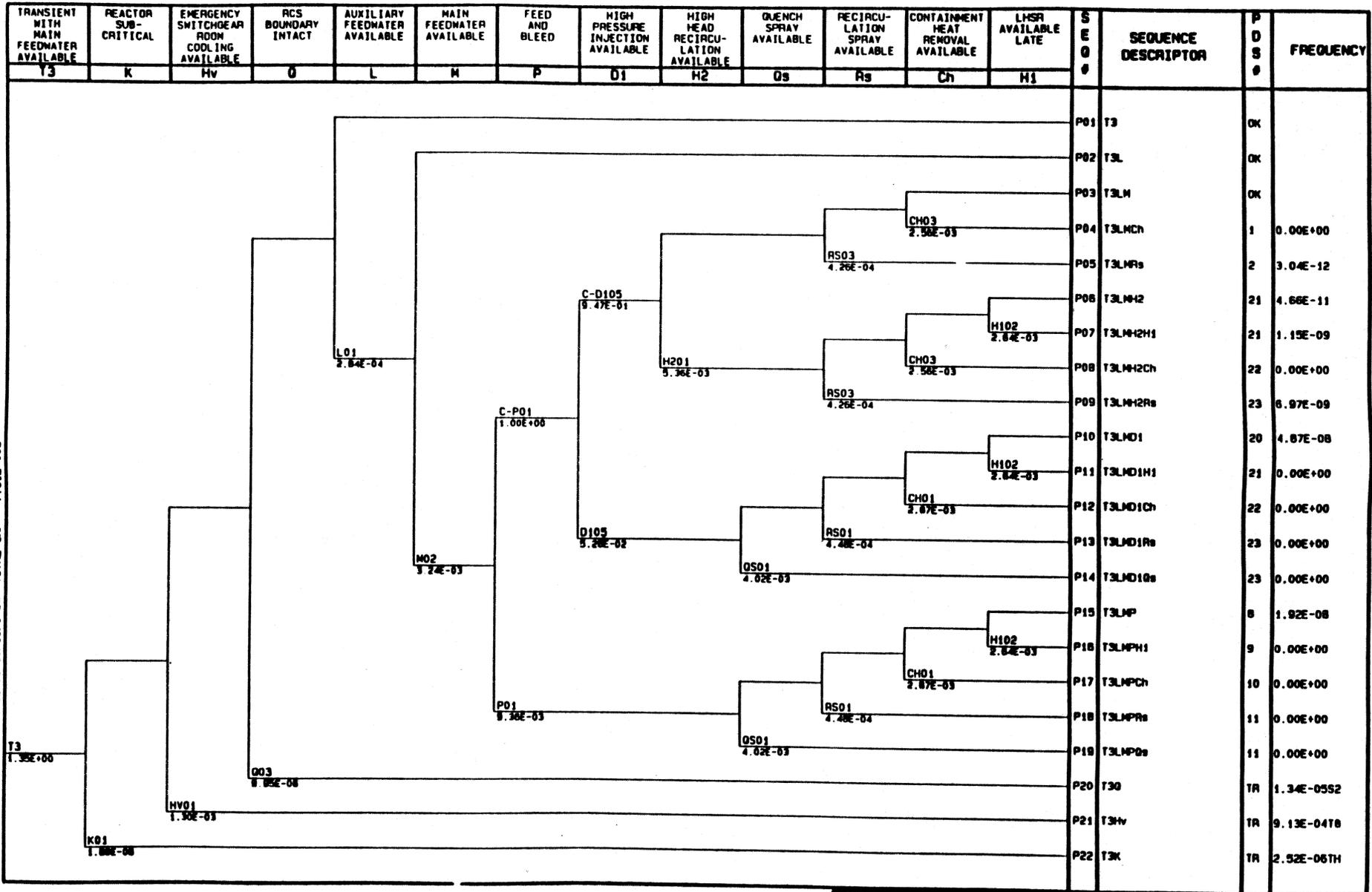
C:\MAPS\ETRES\OLD\ETRES\T2TR.EVT 1:00:02ms 12-15-92 NUPRA 2.1a VPR
 Quantification Date: 3-12-93 10:14:37am TOTAL CDF = 1.44E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T2 LOSS OF MAIN FEEDWATER EVENT TREE

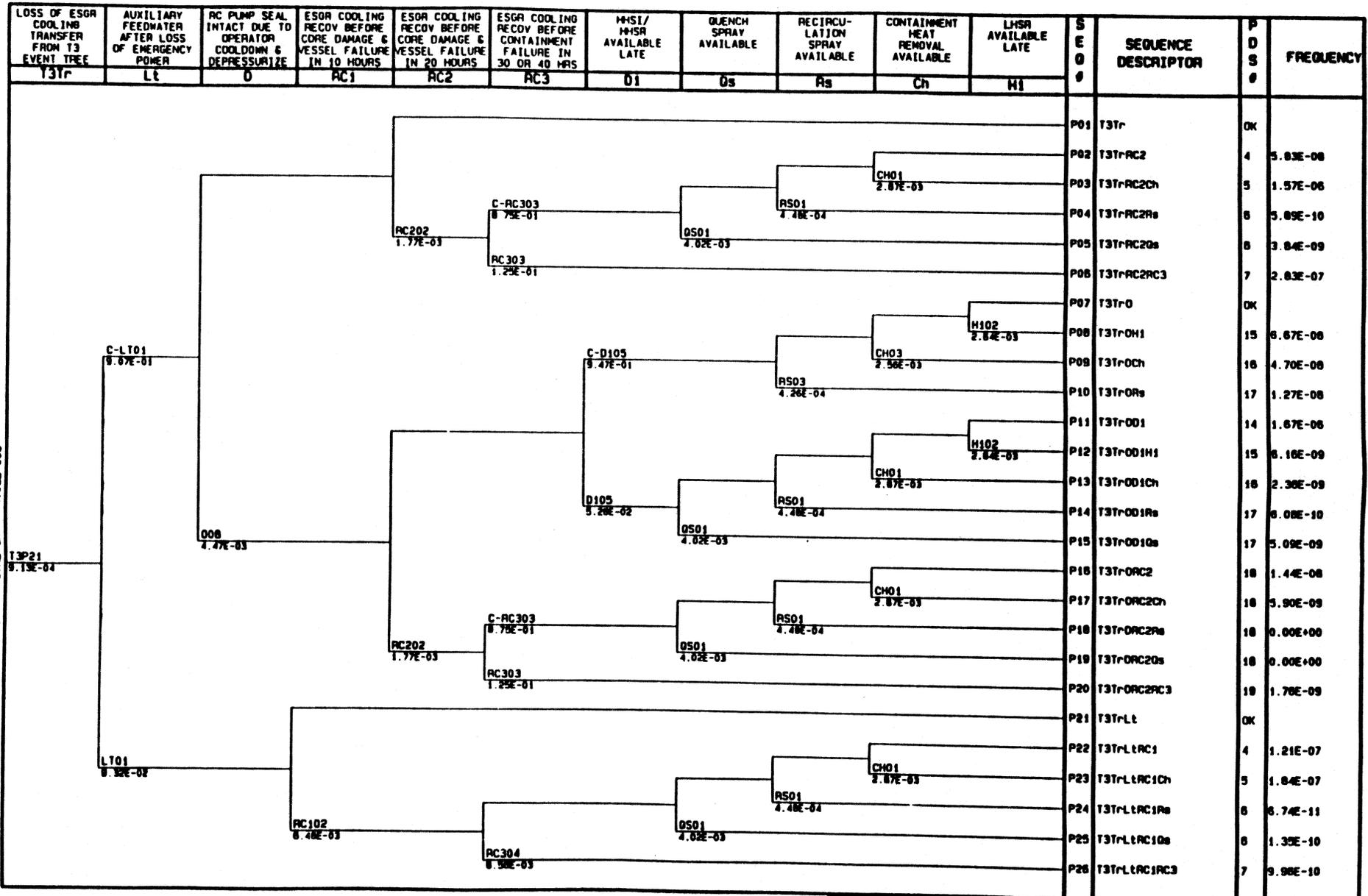
C:\NAPS\NETRES\UO\TREE\T3.EVT 1:00:02pm 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:18:14am TOTAL CHF = 7.61E+08



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T3: TRANSIENT WITH MAIN FEEDWATER AVAILABLE EVENT TREE

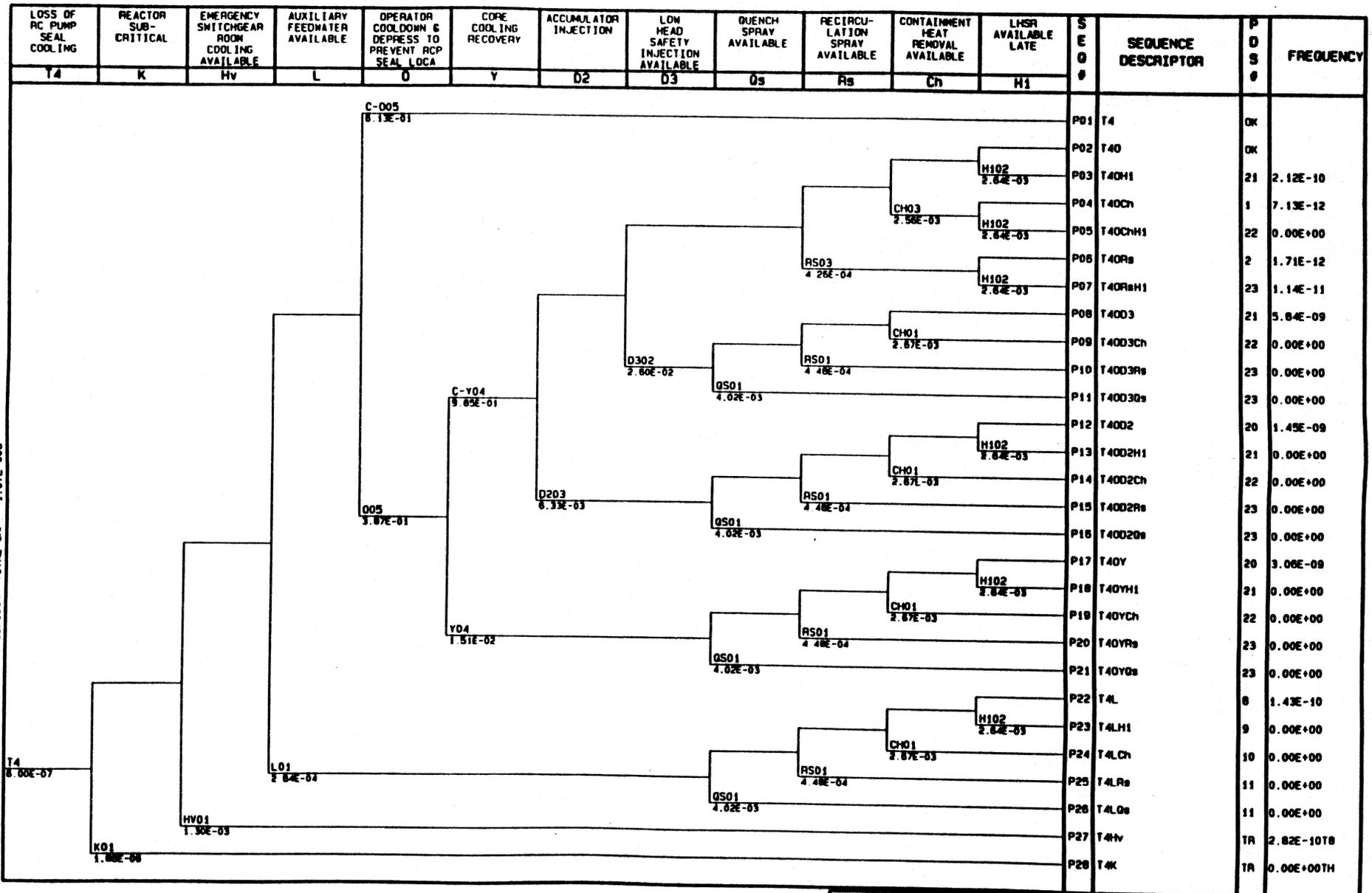
C:\NAPS\ETREES\ADITREES\T3TR.EVT 3:00:02pm 12-15-92 MUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:18:23am TOTAL CDF = 4.02E-06



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T3Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING
 TRANSFER FROM T3 TRANSIENT WITH MFW AVAILABLE EVENT TREE

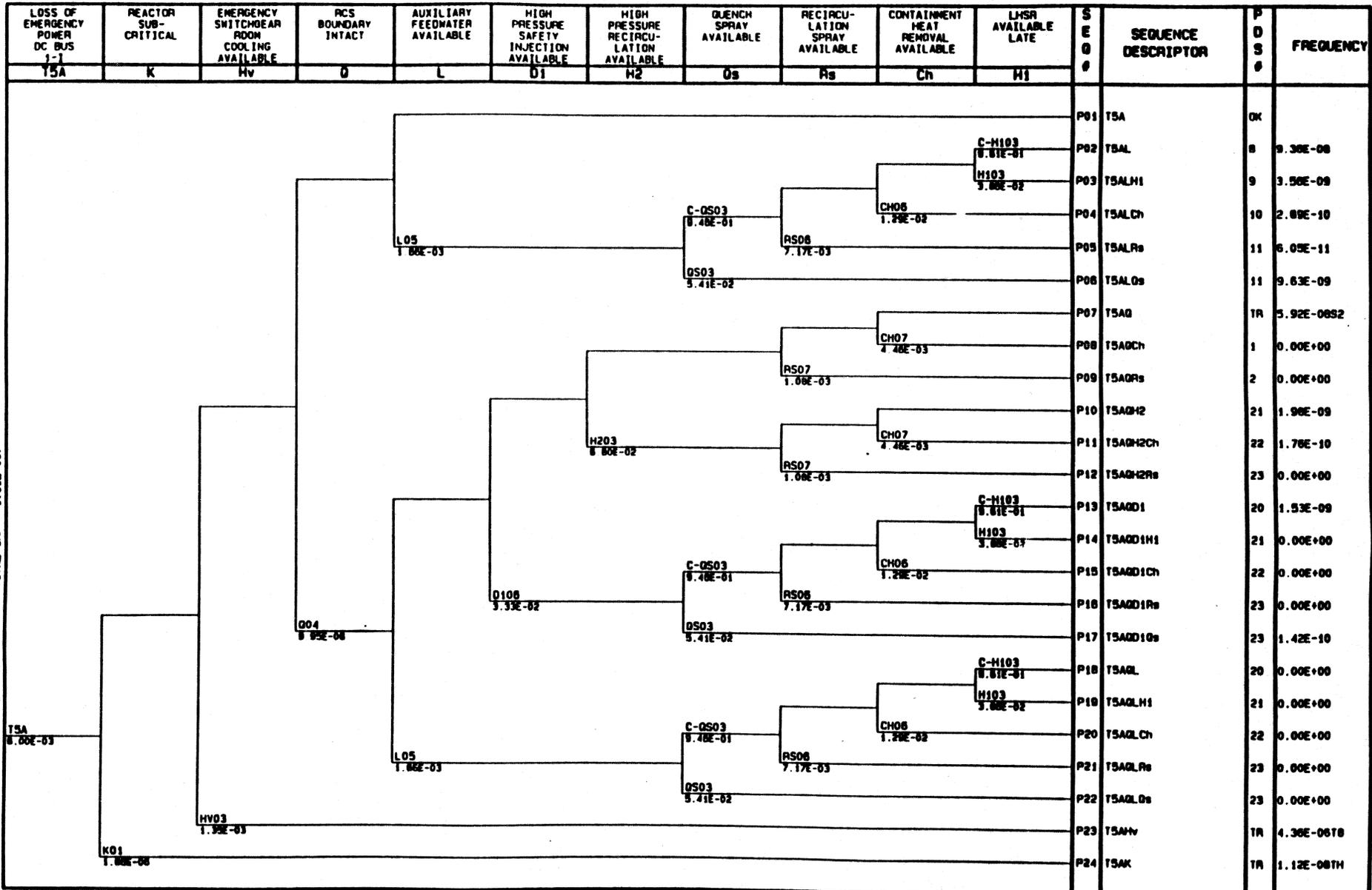
C:\NAPS\ETRES\OLDTRES\T4.EVT 1:06:02am 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:22:19am TOTAL CDF = 1.07E-008



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T4: LOSS OF REACTOR COOLANT PUMP SEAL COOLING EVENT TREE

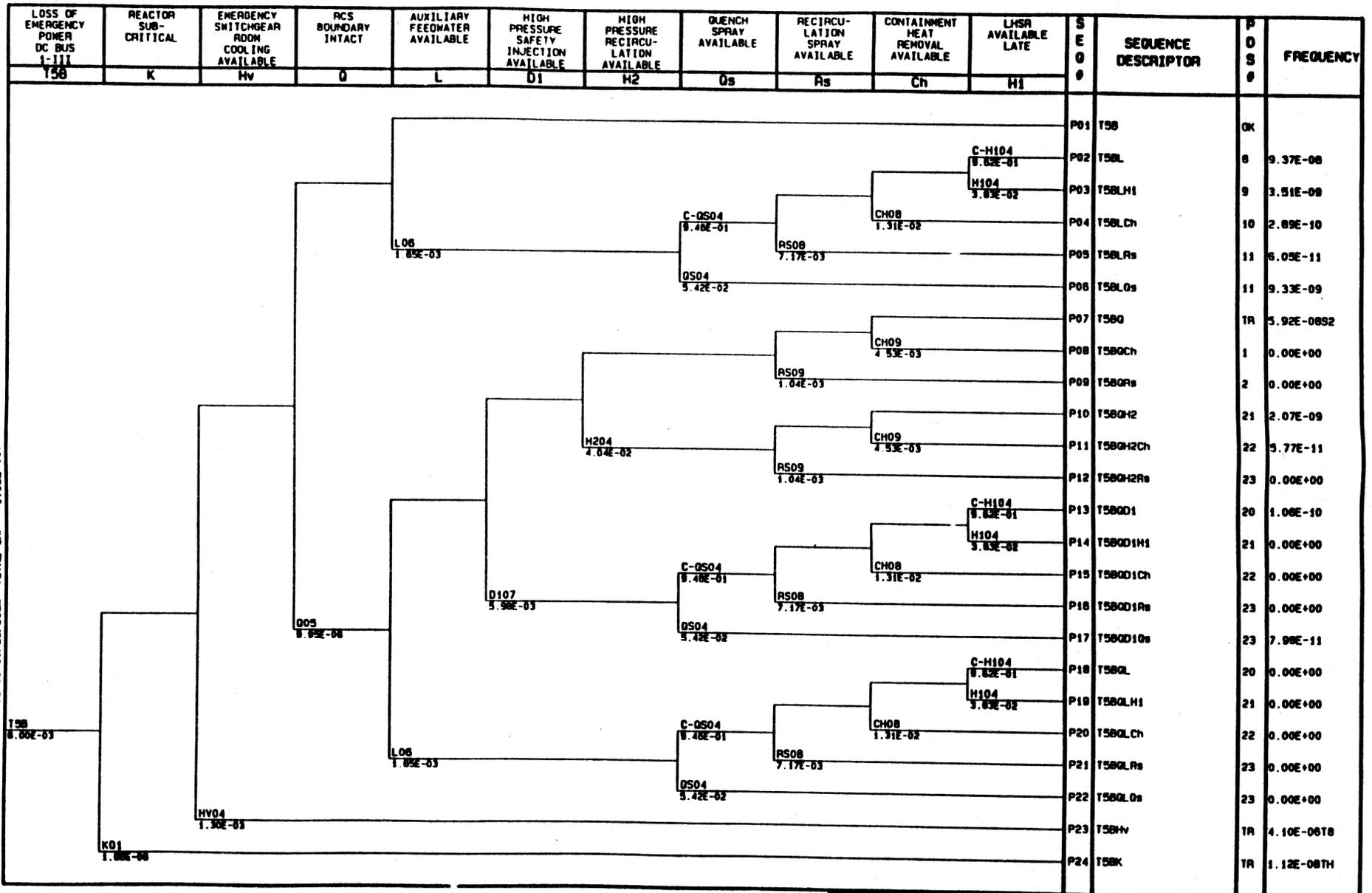
C:\MAPS\ETRES\ADTRES\TSA.EVT 1:00:02pm 12-15-83 NUPRA 2.13 VPMR
 Quantification Date: 3-12-83 10:24:25am TOTAL CDF = 1.11E-07



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

TSA: LOSS OF EMERGENCY POWER DC BUS 1-1 EVENT TREE

C:\NAPS\ETRES\OLD\TRES\T5B.EVT 1:00:02am 12-15-92 NUMA 2.1a VPMR
 Quantification Date: 3-12-93 10:28:36am TOTAL CHF = 1.09E-007

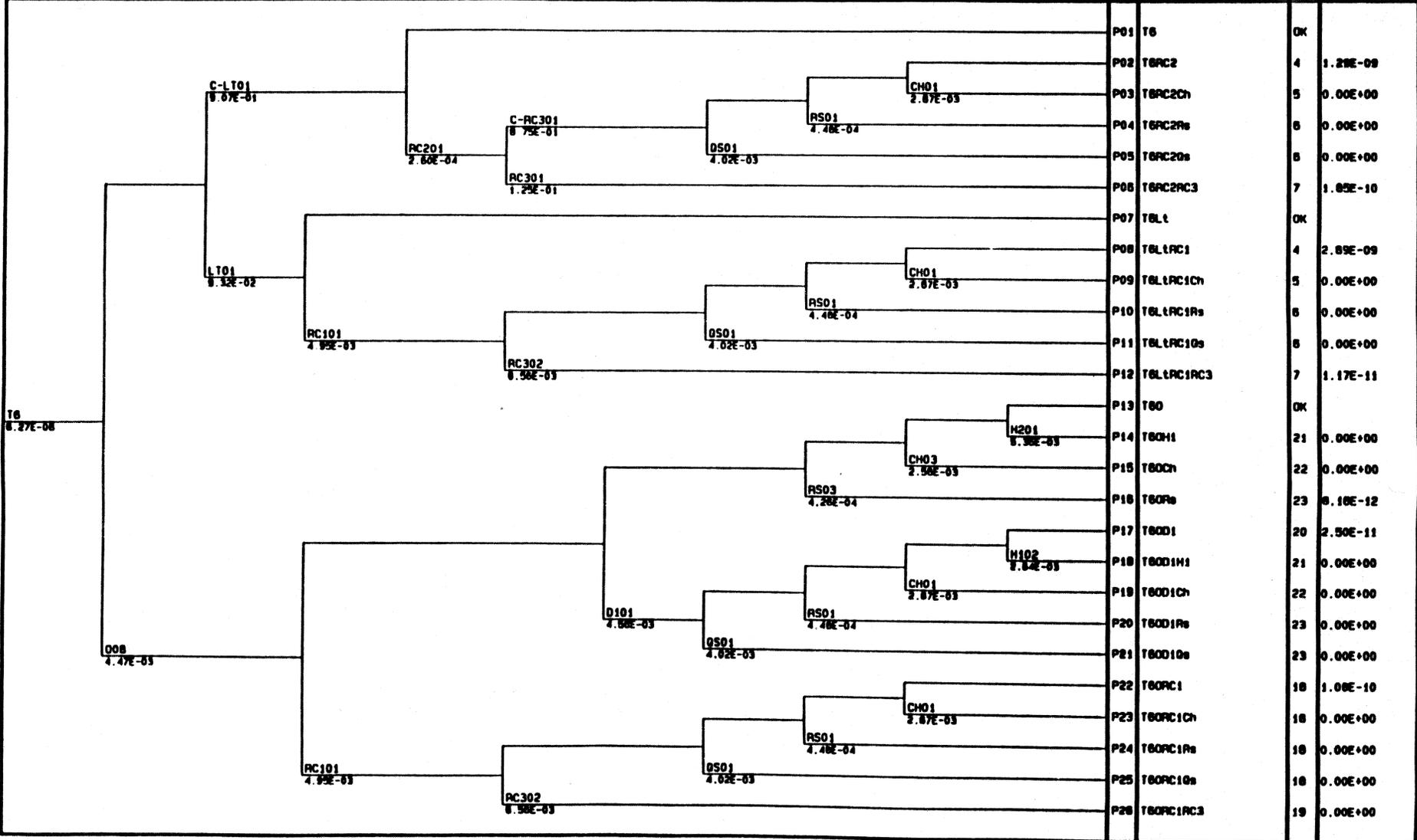


NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T5B: LOSS OF EMERGENCY POWER DC BUS 1-III EVENT TREE

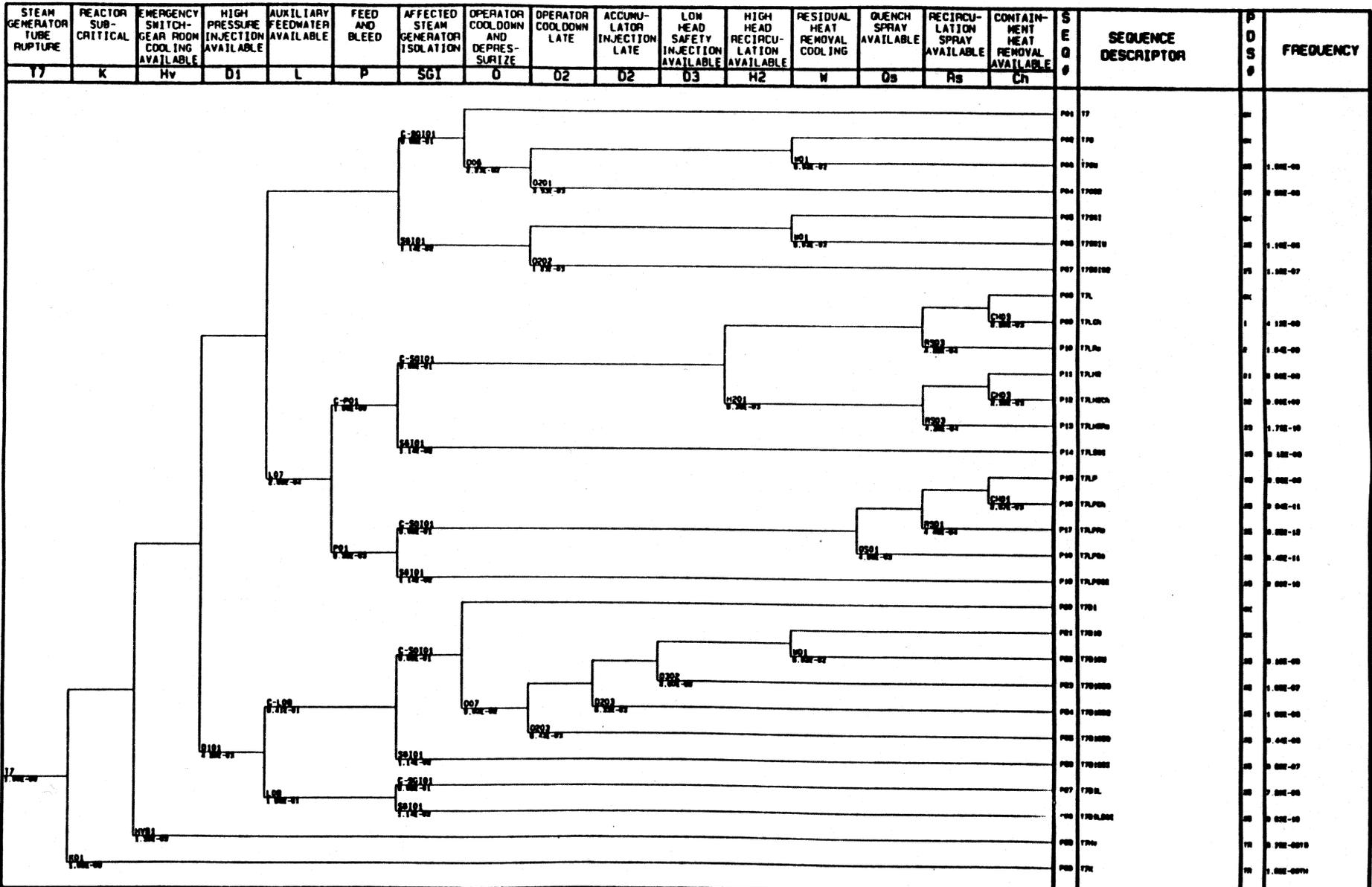
LOSS OF SERVICE WATER	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	SW RECOVERY BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	SW RECOVERY BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	SW RECOVERY BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	M/SI/ M/HSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LHSR AVAILABLE LATE	SEQUENCE	SEQUENCE DESCRIPTOR	POS	FREQUENCY
T6	0	Lt	RC1	RC2	RC3	D1	Qs	Rs	Ch	H1	0		0	

C:\NAPS\ETRES\ADTRES\T6.EVT 1:00:02am 12-15-82 NUPRA 2.1a VPMR
 Quantification Date: 3-12-83 10:28:03am TOTAL CF = 4.93E-009



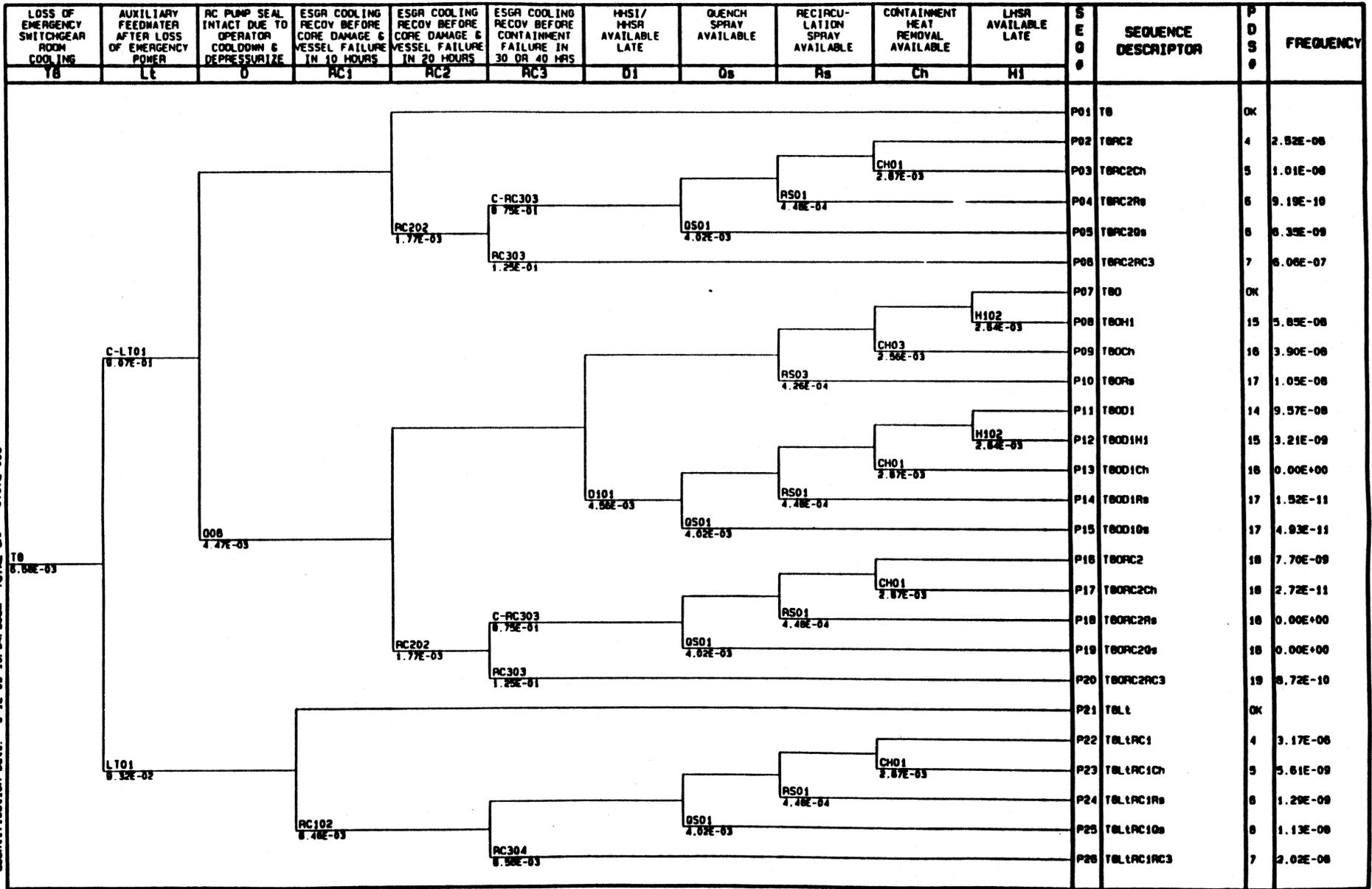
NORTH ANNA INDIVIDUAL PLANT EXAMINATION
T6: LOSS OF SERVICE WATER EVENT TREE

C:\NAPS\IPEES\LOITRES\17.EVT 1:00:02am 12-15-92 MUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:31:32am TOTAL CHF = 7.01E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION
 17: STEAM GENERATOR TUBE RUPTURE EVENT TREE

C:\VAPS\ETRES\QLOTTRES\TB.EVT 1:00:02am 12-15-92 MUPA 2.1a VWER
 Quantification Date: 3-12-93 10:34:30am TOTAL CDF = 6.57E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T8: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING EVENT TREE

C:\VAPS\ETRES\QLOTTRES\TSA.EVT 1:00:02am 12-15-92 NAPS 2.18 VPMR
 Quantification Date: 3-12-93 10:37:26am TOTAL CDF = 4.15E-07

LOSS OF EMERGENCY POWER 4160 V BUS 1H	REACTOR SUB-CRITICAL	EMERGENCY SWITCHGEAR ROOM COOLING AVAILABLE	RCS BOUNDARY INTACT	AUXILIARY FEEDWATER AVAILABLE	HIGH PRESSURE SAFETY INJECTION AVAILABLE	HIGH PRESSURE RECIRCULATION AVAILABLE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONFINEMENT HEAT REMOVAL AVAILABLE	LHSP AVAILABLE LATE	SEQUENCE DESCRIPTOR	SEQUENCE DESCRIPTOR	PDS	FREQUENCY
T9A	K	Hv	O	L	D1	H2	Os	Rs	Ch	H1	SEQ #			
											P01	T9A	OK	
										C-H105 8.48E-01	P02	T9AL	B	1.72E-07
										H105 5.12E-02	P03	T9ALH1	9	1.72E-09
										CH10 1.55E-02	P04	T9ALCh	10	0.00E+00
											P05	T9ALRs	11	0.00E+00
											P06	T9ALOs	11	6.25E-09
											P07	T9AQ	TR	2.29E-0692
											P08	T9AQCh	1	0.00E+00
											P09	T9AQRs	2	0.00E+00
											P10	T9AQH2	21	1.31E-07
											P11	T9AQH2Ch	22	0.00E+00
											P12	T9AQH2Rs	23	0.00E+00
											P13	T9AQD1	20	1.02E-07
										C-H105 8.48E-01	P14	T9AQD1H1	21	4.36E-10
										H105 5.12E-02	P15	T9AQD1Ch	22	0.00E+00
										CH10 1.55E-02	P16	T9AQD1Rs	23	0.00E+00
											P17	T9AQD1Os	23	1.90E-09
											P18	T9AQL	20	0.00E+00
										C-H105 8.48E-01	P19	T9AQLH1	21	0.00E+00
										H105 5.12E-02	P20	T9AQLCh	22	0.00E+00
										CH10 1.55E-02	P21	T9AQLRs	23	0.00E+00
											P22	T9AQLOs	23	0.00E+00
											P23	T9AHv	TR	4.00E-03TB
											P24	T9AK	TR	3.18E-06TH

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T9A: LOSS OF EMERGENCY POWER 4160 V BUS 1H EVENT TREE

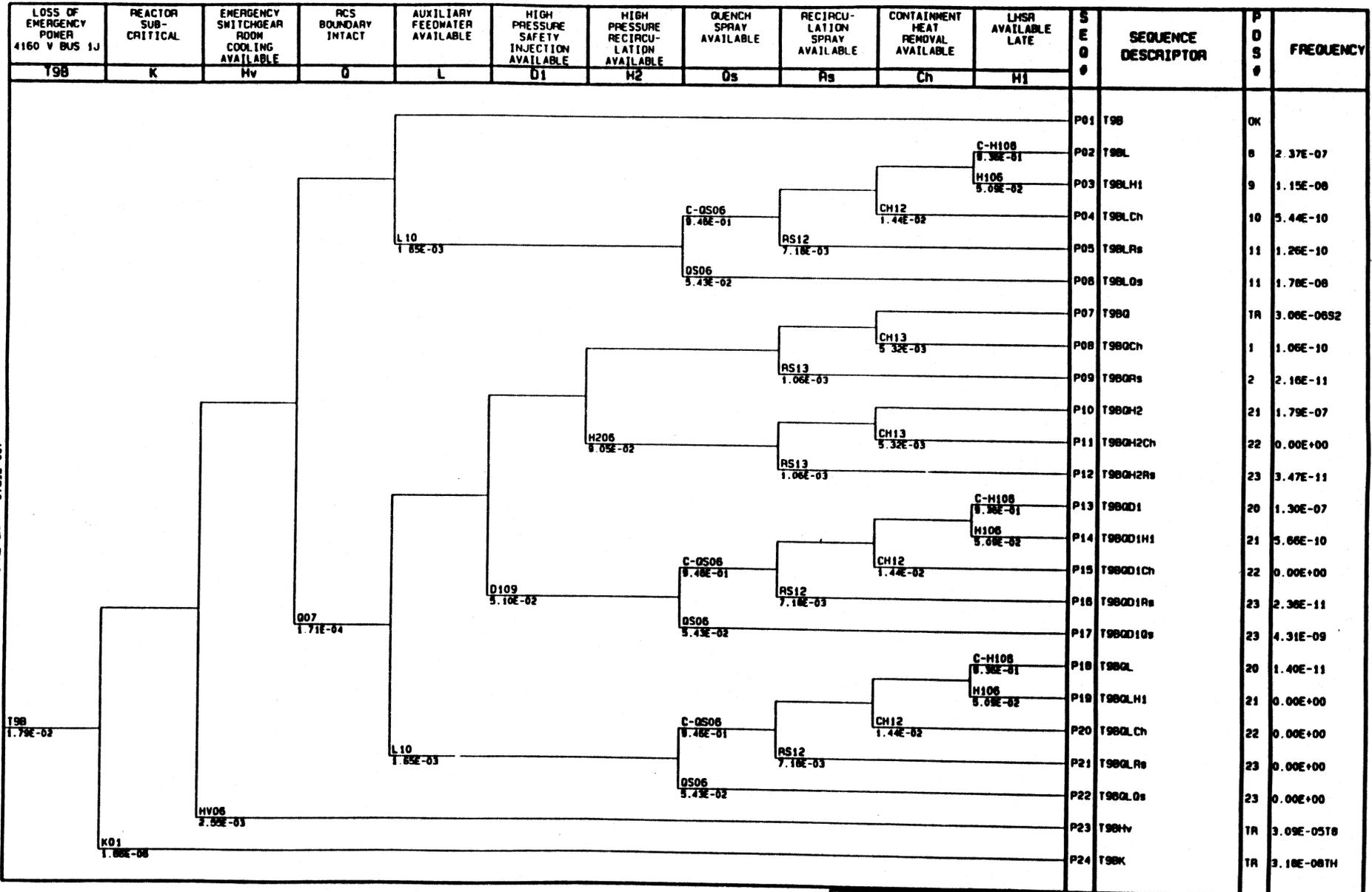
C:\MAPS\ETRES\OLD\TRES\TSATR.EVT 1:00:02pm 12-15-92 MAFRA 2.10 VPMR
 Quantification Date: 3-12-93 10:38:17am TOTAL CDF = 3.28E-06

LOSS OF ESGR COOLING TRANSFER FROM T9A EVENT TREE	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	ESGR COOLING RECOV BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	HHSI/HHSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LNSR AVAILABLE LATE	SEQUENCE DESCRIPTOR	POS	FREQUENCY	
T9ATr	0	Lt	RC1	RC2	RC3	D1	Os	Rs	Ch	H1				
											P01	TSATr	OK	
											P02	TSATrRC2	4	8.33E-07
											P03	TSATrRC2Ch	5	1.07E-06
											P04	TSATrRC2Rs	6	0.00E+00
											P05	TSATrRC2Os	6	1.17E-08
											P06	TSATrRC2RC3	7	1.07E-07
											P07	TSATrLt	OK	
											P08	TSATrLtRC1	4	1.53E-06
											P09	TSATrLtRC1Ch	5	8.22E-10
											P10	TSATrLtRC1Rs	6	0.00E+00
											P11	TSATrLtRC1Os	6	1.89E-08
											P12	TSATrLtRC1RC3	7	0.00E+00
											P13	TSATrD	OK	
											P14	TSATrDH1	21	3.88E-07
											P15	TSATrDCh	22	0.00E+00
											P16	TSATrDRs	23	9.42E-10
											P17	TSATrDD1	20	3.07E-07
											P18	TSATrDD1H1	21	0.00E+00
											P19	TSATrDD1Ch	22	1.69E-06
											P20	TSATrDD1Rs	23	0.00E+00
											P21	TSATrDD1Os	23	8.77E-09
											P22	TSATrDRC1	18	2.01E-08
											P23	TSATrDRC1Ch	18	0.00E+00
											P24	TSATrDRC1Rs	18	0.00E+00
											P25	TSATrDRC1Os	18	0.00E+00
											P26	TSATrDRC1RC3	19	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

TSATR: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T9A LOSS OF 4160 V BUS 1H EVENT TREE

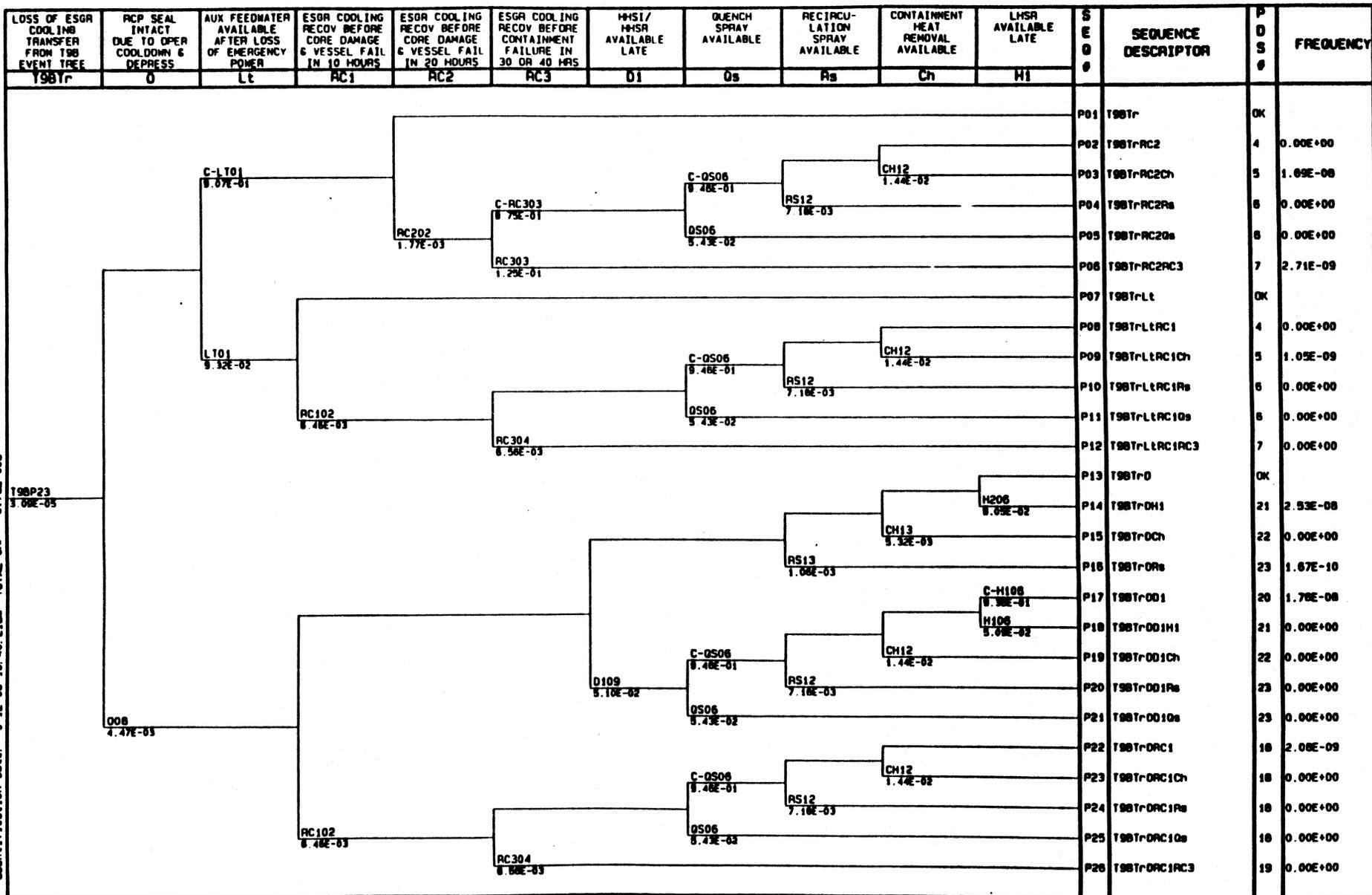
C:\NAPS\ETRES\OLD\ETRES\T98.EVT 1:00:02pm 12-15-92 NUPRA 2.18 VPMR
 Quantification Date: 3-12-93 10:36:49am TOTAL CDF = 5.81E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T98: LOSS OF EMERGENCY POWER 4160 V BUS 1J EVENT TREE

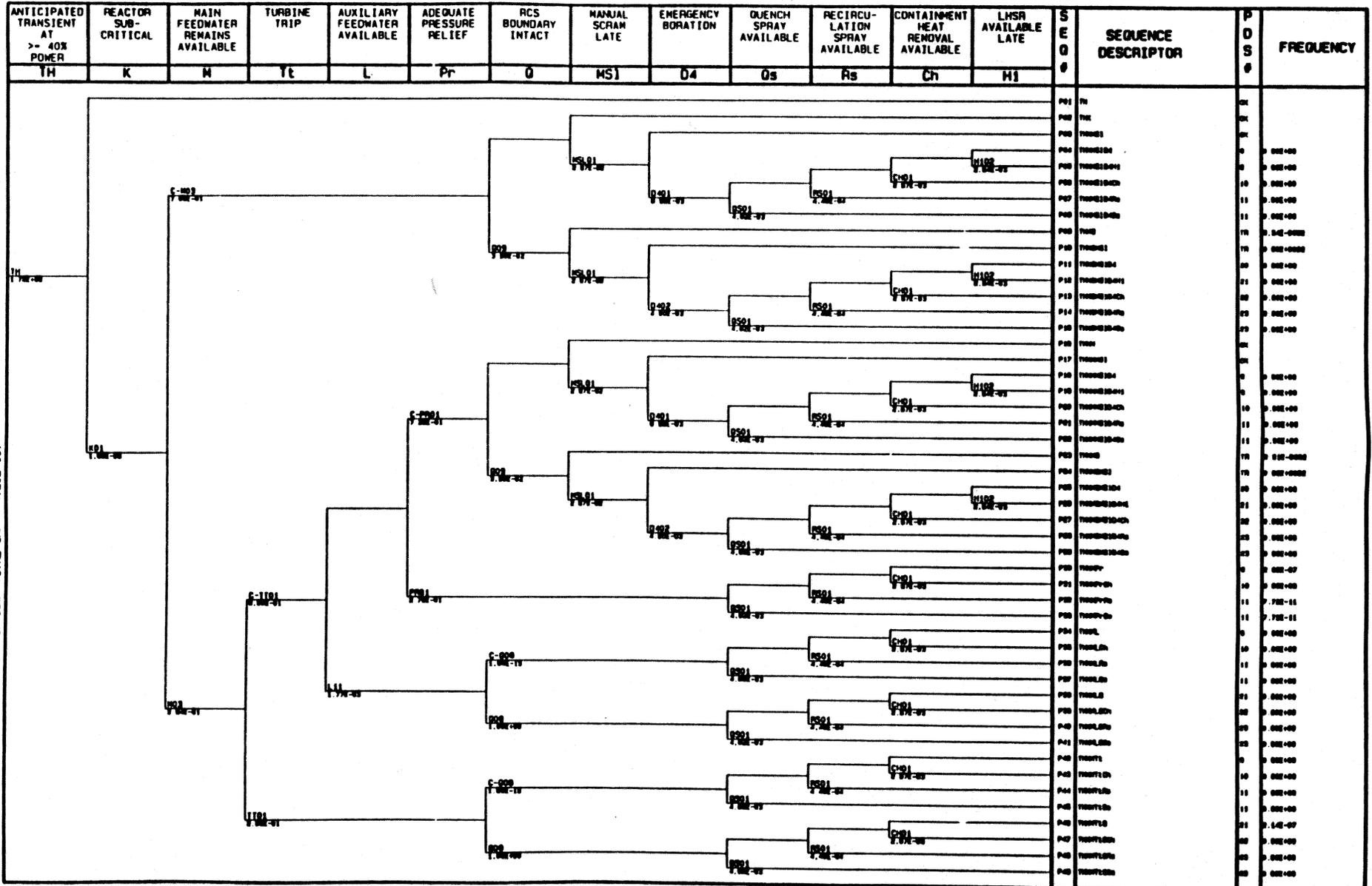
C:\MAPS\ETREES\LOITREES\T98TR EVT 1: 00: 02sec 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10: 40: 21am TOTAL CDF = 6.78E-008



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T98Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING
 TRANSFER FROM T98 LOSS OF 4160 V BUS 1J EVENT TREE

C:\MAPS\ETRES\IPE\IPE.EVT 1:00:02 on 12-15-92 MURRA 2.13 VPMR
 Quantification Date: 3-12-93 10:45:43am TOTAL CDF = 4.20E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION
 TH HIGH POWER ATMS EVENT TREE
 (ANTICIPATED TRANSIENT WITHOUT SCRAM AT 40% OR MORE POWER)

C:\NAPS\NETRES\OLD\RES\TL.EVT 1:00:02pm 12-15-92 NUPRA 2.1a VPMR
 Quantification Date: 3-12-93 10:48:42am TOTAL CHF = 0.00E+000

ANTICIPATED TRANSIENT AT < 40% POWER	REACTOR SUB-CRITICAL	MAIN OR AUXILIARY FEEDWATER AVAILABLE	RCS BOUNDARY INTACT	MANUAL SCRAM LATE	EMERGENCY BORATION	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LMSR AVAILABLE LATE	SEQUENCE	SEQUENCE DESCRIPTOR	PROBABILITY	FREQUENCY	
TL	K	L	O	MS1	D4	Os	Rs	Ch	H1	0		0		
TL 3.80E-01 KO1 1.80E-08 L12 5.81E-04 O09 3.80E-02										P01	TL	OK		
										P02	TLK	OK		
											P03	TLKMS1	OK	
											P04	TLKMS1D4	8	0.00E+00
											P05	TLKMS1D4H1	9	0.00E+00
											P06	TLKMS1D4Ch	10	0.00E+00
											P07	TLKMS1D4Rs	11	0.00E+00
											P08	TLKMS1D4Os	11	0.00E+00
											P09	TLKQ	TR	0.00E+00S2
											P10	TLKMS1	TR	0.00E+00S2
											P11	TLKMS1D4	20	0.00E+00
											P12	TLKMS1D4H1	21	0.00E+00
											P13	TLKMS1D4Ch	22	0.00E+00
											P14	TLKMS1D4Rs	23	0.00E+00
											P15	TLKMS1D4Os	23	0.00E+00
											P16	TLKL	8	0.00E+00
											P17	TLKLH1	9	0.00E+00
											P18	TLKLCh	10	0.00E+00
											P19	TLKLRs	11	0.00E+00
											P20	TLKLOs	11	0.00E+00
											P21	TLKLO	20	0.00E+00
											P22	TLKLOH1	21	0.00E+00
											P23	TLKLOCh	22	0.00E+00
											P24	TLKLORs	23	0.00E+00
											P25	TLKLOOs	23	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

TL: LOW POWER ATMS EVENT TREE
 (ANTICIPATED TRANSIENT WITHOUT SCRAM, LESS THAN)

(MER)

